

intentional release of the handles 18a and 18b the limiter device allows the Belleville washers to snap the handles and actuator rods and the eccentric out of position so that the Belleville washers, once more in a fail-safe mode, apply the clamping force in both dimensions.

Although specific features of this invention are shown in some drawings and not others, this is for convenience only as each feature may be combined with any or all of the other features in accordance with the invention.

Other embodiments will occur to those skilled in the art and are within the following claims:

What is claimed is:

1. A leg holder system for simultaneous positioning in an abduction dimension and a lithotomy dimension comprising:

a support device, having a longitudinal axis, for supporting a leg cradle;

a clamping device for mounting a proximate end of said support device to a mounting device having a first axis transverse to said longitudinal axis and selectively simultaneously clamping and releasing motion of said support device about said first axis and about a second axis transverse to both said first axis and said longitudinal axis, said support device fixed in said clamping device from rotation about said longitudinal axis;

an actuator device for actuating said clamping device to simultaneously selectively clamp and release said support device and said mounting device; and

an operator device remote from said clamping device and said actuator device for operating said actuator device to enable said support device to move jointly about both said first and said second axes in the abduction and lithotomy dimensions.

2. The leg holder system of claim 1 in which said clamping device includes a pair of pressure blocks, a first recess for receiving said mounting device and a second recess for receiving said support device.

3. The leg holder system of claim 2 in which said clamping device includes a biasing device for biasing said blocks to normally produce friction between said recesses and their respective mounting and support devices to clamp them in position.

4. The leg holder system of claim 1 in which said actuator device includes an actuator rod extending with said support device.

5. The leg holder system of claim 4 in which said support device includes a bore and said actuator rod is disposed in said bore.

6. The leg holder system of claim 4 in which said actuator device includes a camming device fixed to said actuator rod and a follower device disposed in said clamping device and responsive to said camming device for opposing said biasing device to simultaneously decrease the friction force on said support device and on said mounting device to release the clamping device in both axes.

7. The leg holder system of claim 1 in which said operator device includes a handle for both operating said actuator device to remotely release and secure said clamping device to said support device and said mounting device and to position said support device in the abduction and lithotomy dimensions.

8. The leg holder system of claim 1 in which said support device includes a resilient device for counterbalancing the weight borne by said support device.

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9. The leg holder system of claim 6 in which said operator device includes a handle for both operating said actuator device to remotely release and secure said clamping device to said support device and said mounting device and to position said support device in the abduction and lithotomy dimensions.

10. The leg holder system of claim 9 in which the axis of said handle is coincident with the axis of said actuator rod for independent actuation of said clamp device and motion of said support device in the lithotomy dimension.

11. The leg holder system of claim 7 in which said handle includes a rotatable sleeve.

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12. The leg holder system of claim 1 in which said support device includes a cradle bracket for mounting a leg cradle spaced from said longitudinal axis of said support means.

13. The leg holder system of claim 6 in which said actuator device includes a limiter device for arresting movement of said camming device before its highest position to enable said biasing device to back-drive said camming device when said operator device is released and automatically re-establish the clamping friction between said recesses and said support and mounting devices.

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14. A leg positioning apparatus comprising a support device,

a leg cradle coupled to the support device and movable about a first plurality of axes relative to the support device,

a clamping device coupling the support device to a mounting device, the clamping device being configured to clamp the motion of the support device relative to the mounting device and to release the support device for rotative movement relative to the mounting device about a second plurality of axes, the leg cradle being movable about the first plurality of axes when the support device is clamped against movement about the second plurality of axes,

an actuator device configured to move the clamping device to selectively clamp and release the support device relative to the mounting device, and

an operator device remote from the clamping device and remote from the actuator device, the operator device being operatively coupled to the actuator device, the operator device being configured to operate the actuator device.

15. The leg positioning apparatus of claim 14, wherein the second plurality of pivot axes includes a first axis about which the support device rotates in an abduction dimension and a second axis about which the support device rotates in a lithotomy dimension.

16. The leg positioning apparatus of claim 14, wherein the support device comprises an elongated member having a proximal end coupled to the clamping device and a distal end spaced apart from the clamping device.

17. The leg positioning apparatus of claim 16, wherein the operator device is positioned to lie adjacent the distal end of the elongated member.

18.. The leg positioning apparatus of claim 17, wherein the distal end of the elongated member is positioned to lie between the operator device and the clamping device.

19. The leg positioning apparatus of claim 16, wherein the elongated member includes a tube having an elongated channel therethrough, an element coupling the operator device to the clamping device, and the element being positioned to lie in the channel.

20. The leg positioning apparatus of claim 19, wherein the element is a rod that rotates in the channel to operate the actuator device.

21. The leg positioning apparatus of claim 14, wherein the clamping device includes a housing formed to include a tapered bore and a pressure block configured to wedge against the tapered bore to clamp the clamping device against rotation about the second plurality of axes.

22. The leg positioning apparatus of claim 21, wherein the housing includes a recess configured to receive the mounting device and the pressure block being biased to tighten the recess of the housing against the mounting device.

23. The leg positioning apparatus of claim 22, wherein the clamping device includes at least one Belleville washer to bias the pressure block to wedge against the tapered bore.

24. A leg positioning apparatus comprising
a mounting device,
an elongated member,
a leg holder adapted to engage and support at least a portion of a leg of a patient,
a coupler configured to couple the leg holder to the elongated member, the coupler being configured to permit adjustment of a position of the leg holder relative to the elongated member about a first plurality of axes,

a locking device coupled to the mounting device and coupled to the elongated member, the locking device being movable between a locking position in which the elongated member is fixed relative to the mounting device and a releasing position in which the elongated member is rotatable about a second plurality of axes relative to the mounting device, and

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an operator device coupled to the elongated member and operatively coupled to the locking device, the coupler being positioned to lie between the operator device and the locking device, the operator device being movable to move the locking device between the locking position and the releasing position.

25. The leg positioning apparatus of claim 24, wherein the mounting device includes a post that defines one axis of the second plurality of axes and the elongated element is movable about the post when the locking device is in the releasing position.

26. The leg positioning apparatus of claim 25, wherein the locking device includes a member that clamps against the post when the locking device is in the locking position.

27. The leg positioning apparatus of claim 25, wherein the mounting device includes a block adapted to be coupled to an accessory rail of a patient-support table and the post is coupled to the block.

28. The leg positioning apparatus of claim 25, further comprising a resilient device configured to counterbalance weight supported by the leg holder, the resilient device being coupled to the post, and the resilient device being coupled to the elongated member.

29. The leg positioning apparatus of claim 24, wherein the elongated member includes a proximal end coupled to the locking device and a distal end spaced apart from the proximal end, and the operator device is adjacent the distal end of the elongated member.

30. The leg positioning apparatus of claim 29, wherein the distal end of the elongated member is between the operator device and the locking device.

31. The leg positioning apparatus of claim 24, wherein the elongated member defines a longitudinal axis and the operator device rotates about the longitudinal axis to move the locking device between the locking position and the releasing position.

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32. The leg positioning apparatus of claim 24, further comprising a rod coupled to the operator device and extending therefrom toward the locking device.

33. The leg positioning apparatus of claim 32, wherein the elongated member includes a tube having a passage therethrough and the rod is positioned to lie in the passage.

34. The leg positioning apparatus of claim 32, wherein a portion of the tube and a portion of the rod extend through the coupler.

35. The leg positioning apparatus of claim 24, wherein the locking device includes a member that is yieldably biased against the mounting device when the locking device is in the locking position.

36. The leg positioning apparatus of claim 24, wherein the mounting device includes a post and the locking device includes a housing formed to include a recess receiving the post and a gap extending radially therefrom and having a transverse length so that increasing the length of the gap permits rotation of the housing relative to the post.

37. The leg positioning apparatus of claim 36, wherein the recess defines a first axis of the second plurality of axes and the housing is formed to include a bore defining a second axis of the second plurality of axes.

38. The leg positioning apparatus of claim 37, wherein the second axis is generally orthogonal to the first axis.

39. The leg positioning apparatus of claim 37, wherein the locking device further comprises first and second pressure blocks received by the bore, the first pressure block being movable relative to the second pressure block within the bore, the first and second pressure blocks engaging the housing and being configured so that the movement of the first pressure block toward

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the second pressure block decreases the length of the gap of the housing and the housing grips the post, thereby blocking rotation of the housing relative to the post.

40. The leg positioning apparatus of claim 24, wherein the locking device includes a housing, a first pressure block received by the housing, a second pressure block received by the housing, and a spring received by the housing and acting to yieldably bias the first pressure block toward the second pressure block.

41. The leg positioning apparatus of claim 40, wherein the first pressure block comprises a proximal end, a distal end, and a head formed on the distal end and the second pressure block comprises a proximal end, a distal end, and a head formed on the distal end, and wherein the first and second pressure blocks are movable between an inward position at which the head of the first pressure block and the head of the second pressure block frictionally engage the housing to block rotation of the first and second pressure blocks relative to the housing and an outward position permitting rotation of the first and second pressure blocks relative to the housing.

42. The leg positioning apparatus of claim 41, wherein at least one of the first and second pressure blocks is formed to include a bore receiving the elongated member so that the elongated member rotates relative to the housing when the first and second pressure blocks rotate relative to the housing and so that movement of the elongated member relative to the housing is blocked when the first and second pressure blocks are at the inward position.

43. The leg positioning apparatus of claim 41, wherein the mounting device includes a post, the housing is formed to include a recess receiving the post and a gap extending radially therefrom, the gap having a transverse length so that increasing the length of the gap permits rotation of the housing relative to the post and so that movement of the first and second pressure blocks to the inward position decreases the length of the gap thereby blocking rotation of the housing relative to the post.

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44. The leg positioning apparatus of claim 24, wherein the locking device includes a housing and first and second pressure blocks received by the housing movable relative to one another between an inward position at which the locking device is in the locking position and an outward position at which the locking device is in the releasing position.

45. The leg positioning apparatus of claim 44, further comprising an actuator device operatively coupling the operator device to at least one of the first and second pressure blocks, the actuator device being movable between a first position at which the first and second pressure blocks are at the outward position and a second position at which the first and second pressure blocks are at the inward position.

46. The leg positioning apparatus of claim 45, wherein the operator device includes a handle and further comprising a rod coupled to the handle, the rod being coupled to the actuator device so that movement of the handle moves the actuator device.

47. The leg positioning apparatus of claim 45, wherein the actuator device includes an eccentric portion, one of the first and second pressure blocks comprises a follower portion, the eccentric portion engaging the follower portion to move the first and second pressure blocks to the outward position when the actuator device is rotated in a first direction.

48. A leg positioning apparatus comprising
a tube,
a mounting device,
a clamping device coupling the tube to the mounting device, the clamping device being movable between a normal condition having the tube fixed relative to the mounting device and a release condition in which the tube is rotatable relative to the mounting device about a plurality of axes,

a leg holder coupled to the tube at a first distance away from the clamping device, and

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an operator device coupled to the tube at a second distance away from the clamping device, the second distance being greater than the first distance, the operator device being movable to move the clamping device between the normal condition and the release condition.

49. The leg positioning apparatus of claim 48, wherein the mounting device includes a post that defines one axis of the plurality of axes and the tube is movable about the post when the clamping device is in the normal condition.

50. The leg positioning apparatus of claim 49, wherein the clamping device includes a member that clamps against the post when the clamping device is in the normal condition.

51. The leg positioning apparatus of claim 49, wherein the mounting device includes a block adapted to be coupled to an accessory rail of a patient-support table and the post is coupled to the block.

52. The leg positioning apparatus of claim 49, further comprising a resilient device configured to counterbalance weight supported by the leg holder, the resilient device being coupled to the post, and the resilient device being coupled to the tube.

53. The leg positioning apparatus of claim 48, wherein the tube includes a proximal end coupled to the clamping device and a distal end spaced apart from the proximal end, and the operator device is adjacent the distal end of the tube.

54. The leg positioning apparatus of claim 53, wherein the distal end of the tube is between the operator device and the clamping device.

55. The leg positioning apparatus of claim 48, wherein the tube defines a longitudinal axis and the operator device rotates about the longitudinal axis to move the clamping device between the normal condition and the release condition.

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56. The leg positioning apparatus of claim 48, further comprising a rod coupled to the operator device and extending therefrom toward the clamping device.

57. The leg positioning apparatus of claim 56, wherein the tube includes a passage therethrough and the rod is positioned to lie in the passage.

58. The leg positioning apparatus of claim 56, wherein a portion of the tube and a portion of the rod extend through the coupler.

59. The leg positioning apparatus of claim 48, wherein the clamping device includes a member that is yieldably biased against the mounting device when the clamping device is in the normal condition.

60. The leg positioning apparatus of claim 48, wherein the mounting device includes a post and the clamping device includes a housing formed to include a recess receiving the post and a gap extending radially therefrom and having a transverse length so that increasing the length of the gap permits rotation of the housing relative to the post.

61. The leg positioning apparatus of claim 60, wherein the recess defines a first axis of the plurality of axes and the housing is formed to include a bore defining a second axis of the plurality of axes.

62. The leg positioning apparatus of claim 61, wherein the second axis is generally orthogonal to the first axis.

63. The leg positioning apparatus of claim 61, wherein the clamping device further comprises first and second pressure blocks received by the bore, the first pressure block being movable relative to the second pressure block within the bore, the first and second pressure blocks engaging the housing and being configured so that the movement of the first pressure block toward

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the second pressure block decreases the length of the gap of the housing and the housing grips the post, thereby blocking rotation of the housing relative to the post.

64. The leg positioning apparatus of claim 48, wherein the clamping device includes a housing, a first pressure block received by the housing, a second pressure block received by the housing, and a spring received by the housing and acting to yieldably bias the first pressure block toward the second pressure block.

65. The leg positioning apparatus of claim 64, wherein the first pressure block comprises a proximal end, a distal end, and a head formed on the distal end and the second pressure block comprises a proximal end, a distal end, and a head formed on the distal end, and the first and second pressure blocks are movable between an inward position at which the head of the first pressure block and the head of the second pressure block frictionally engage the housing to block rotation of the first and second pressure blocks relative to the housing and an outward position permitting rotation of the first and second pressure blocks relative to the housing.

66. The leg positioning apparatus of claim 65, wherein at least one of the first and second pressure blocks is formed to include a bore receiving the tube so that the tube rotates relative to the housing when the first and second pressure blocks rotate relative to the housing and so that movement of the tube relative to the housing is blocked when the first and second pressure blocks are at the inward position.

67. The leg positioning apparatus of claim 65, wherein the mounting device includes a post, the housing is formed to include a recess receiving the post and a gap extending radially therefrom, the gap having a transverse length so that increasing the length of the gap permits rotation of the housing relative to the post and so that movement of the first and second pressure blocks to the inward position decreases the length of the gap thereby blocking rotation of the housing relative to the post.

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clamp, the handle being movable to move the actuator to release the tube for rotation about the plurality of axes relative to the mounting device.

73. The leg positioning apparatus of claim 72, wherein the tube includes a proximal end adjacent the mounting device, the tube includes a distal end spaced apart from the proximal end, and the handle is adjacent the distal end.

74. The leg positioning apparatus of claim 73, wherein the distal end of the tube is positioned to lie between the handle and the clamp.

75. The leg positioning apparatus of claim 72, wherein the actuator comprises a rod fixed to the handle.

76. The leg positioning apparatus of claim 75, wherein the tube defines a longitudinal axis and the handle rotates the rod about the longitudinal axis to release the tube for rotation about the plurality of axes relative to the mounting device.

77. The leg positioning apparatus of claim 72, wherein the tube defines a longitudinal axis and the handle rotates about the longitudinal axis to move the actuator to release the tube for rotation about the plurality of axes relative to the mounting device.

78. The leg positioning apparatus of claim 72, further comprising a clamping device coupling the tube to the mounting device, the clamping device being movable between a lock condition having the tube fixed relative to the mounting device and a release condition in which the tube is rotatable relative to the mounting device about the plurality of axes.

79. The leg positioning apparatus of claim 78, wherein the actuator includes a camming device that moves the clamping device from the lock condition to the release condition.

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80. The leg positioning apparatus of claim 72, further comprising a resilient device configured to counterbalance the weight supported by the leg holder, the resilient device being coupled to the mounting device, and the resilient device being coupled to the tube.

81. A leg positioning apparatus comprising a mounting device, an elongated element lockable relative to the mounting device and releasable to rotate relative to the mounting device about a plurality of axes,

a handle coupled to the elongated element and movable relative to the elongated element to release the elongated element to allow for rotative repositioning of the elongated element about the plurality of axes relative to the mounting device, and

a leg holder coupled to the elongated member between the handle and the mounting device, the leg holder being movable relative to the elongated element when the elongated element is locked relative to the mounting device.

82. The leg positioning apparatus of claim 81, wherein the elongated element includes a proximal end adjacent the mounting device, the elongated element includes a distal end spaced apart from the proximal end, and the handle is adjacent the distal end.

83. The leg positioning apparatus of claim 82, wherein the distal end of the tube is positioned to lie between the handle and the proximal end.

84. The leg positioning apparatus of claim 81, wherein the elongated element defines a longitudinal axis and the handle rotates about the longitudinal axis to release the elongated element for rotation about the plurality of axes relative to the mounting device.

85. The leg positioning apparatus of claim 81, further comprising a locking device coupling the elongated element to the mounting device, the locking device being movable between a locked condition having the elongated element fixed relative to the mounting device and a release

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condition in which the elongated element is rotatable relative to the mounting device about the plurality of axes.

86. The leg positioning apparatus of claim 85, wherein the locking device comprises a clamping device.

87. The leg positioning apparatus of claim 85, wherein movement of the handle moves the locking device between the lock condition to the release condition.

88. The leg positioning apparatus of claim 81, further comprising a resilient device configured to counterbalance the weight supported by the leg holder, the resilient device being coupled to the mounting device, and the resilient device being coupled to the elongated element.

89. The leg positioning apparatus of claim 81, wherein the plurality of axes includes a first axis about which the elongated element rotates in an abduction dimension and a second axis about which the elongated element rotates in a lithotomy dimension.

90. The leg positioning apparatus of claim 81, wherein the mounting device includes a block adapted to be coupled to an accessory rail of a patient-support table.

91. A leg positioning apparatus comprising
a mounting device,
a support device lockable relative to the mounting device and releasable to rotate relative to the mounting device about a first plurality of axes,
a leg holder lockable relative to the support device and releasable to move relative to the support device about a second plurality of axes,
a first handle movable to lock the support device from rotation about the first plurality of axes relative to the mounting device and movable to unlock the support device for rotation about the first plurality of axes relative to the mounting device, and

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a second handle movable to lock the leg holder from moving about the second plurality of axes relative to the support device and movable to unlock the leg holder for movement about the second plurality of axes relative to the support device.

92. The leg positioning apparatus of claim 91, wherein the support device includes a proximal end adjacent the mounting device, the support device includes a distal end spaced apart from the proximal end, and the first handle is adjacent the distal end.

93. The leg positioning apparatus of claim 92, wherein the second handle is positioned to lie between the first handle and the proximal end.

94. The leg positioning apparatus of claim 91, wherein the support device defines a longitudinal axis and the first handle rotates about the longitudinal axis to release the support device for rotation about the first plurality of axes relative to the mounting device.

95. The leg positioning apparatus of claim 91, further comprising a locking device coupling the support device to the mounting device, the locking device being movable between a lock condition having the support device fixed relative to the mounting device and a release condition in which the supported device is rotatable relative to the mounting device about the first plurality of axes.

96. The leg positioning apparatus of claim 95, wherein the locking device comprises a clamping device.

97. The leg positioning apparatus of claim 95, wherein movement of the first handle moves the locking device between the lock condition to the release condition.

98. The leg positioning apparatus of claim 91, further comprising a resilient device configured to counterbalance weight supported by the leg holder, the resilient device being coupled to the mounting device, and the resilient device being coupled to the support device.

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99. The leg positioning apparatus of claim 91, wherein the first plurality of axes includes a first axis about which the support device rotates in an abduction dimension and a second axis about which the support device rotates in a lithotomy dimension.

100. The leg positioning apparatus of claim 91, wherein the mounting device includes a block adapted to be coupled to an accessory rail of a patient-support table.

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